Dr. Kalatu Davies
Statistics 310 -- Fall 2014

Syllabus

The Course
Stat 310 is a calculus-based introduction to mathematical statistics. The general topic areas covered are descriptive statistics, basic probability, probability distributions, confidence intervals, significance testing, linear regression and correlation, association between categorized variables, and ANOVA. There is significant overlap with Stat 280 in terms of material covered.

Textbook
Mathematical Statistics with Applications, by Kandethody M. Ramachandran and Chris P. Tsokos, Academic Press, 2009 (ISBN 13: 978-0-12-374848-5); Optional Online Student solutions manual; R will serve as the basic computing software.

Grading
30% Homework Exercises; 50% Exams; 20% Class Project

Scale
A+ = 97.5% and up; A = 97.4%-93.5%; A- = 93.4%-90%; B+ = 89.4%-86.5%; B = 86.4%-82.5%; B- = 82.4 – 79.5; C+ = 79.4-76.5; C = 76.4%-69.5%; D = 69.4%-59.5%; F = ≤ 59.4% ; Note that A's may be limited to the top 40% of students.

Homework
Homework will usually be assigned each week. You must **show your work** to receive credit for exercises (no answers only). Homework is due by the assigned date on Owlspace. Late homework will ***not*** be accepted, except in the case of university approved excuse. However, your two lowest homework grades will be dropped before calculating final grades. Your TA is also a resource for help with the statistical software and homework. The TA may not do the homework for you, but can answer questions.

Exams
There will be two, in class, closed book exams: a midterm and a comprehensive final. You must **show your work** to receive credit for exercises. I do allow one 81/2 x 11 page of notes (one side of a sheet of paper) for the midterm, and two pages of notes for the final (1 sheet of paper, back and front).

Class Project
There will be a group project to supplement lecture material.

Collaboration and the Honor Code
You may work together on homework, but you are required to write up your own solutions. You may not refer to material from previous offerings of this course, including problem sets, solution sets, or previous exams.

Disability Statement
If you have a documented disability that will impact your work in this class, please contact me to discuss your needs either after class or during my office hours. All discussion will remain confidential. Please make sure that you are registered with the Ley Student Center.

Fall 2014: Course Schedule*

Week	Date	Lecture
08/25-08/29	08/26 08/28	Chapter 1: Descriptive Statistics
09/01-09/05	09/02 09/05	Chapter 2:Probability
09/08-09/12	09/09 09/11	Chapter 3: Additional Probability
09/15-09/19	09/16 09/18	Chapter 3: Continued
09/22-09/26	09/23 09/25	Chapter 4: Sampling Distributions
09/29-10/03	09/30 10/02	Chapter 5: Point Estimation
10/06-10/10	10/07 10/09	Exam Review Tuesday; Exam Thursday: Chapters 1- 4
10/13-10/17	10/14 10/16	Fall Break: No Class Tuesday Thursday – Begin Chapter 6: Interval Estimation
10/20-10/24	10/21 10/23	Finish Chapter 6;
10/27-10/31	10/28 10/30	Chp 7: Hypothesis Testing
11/03-11/07	11/04 11/06	Chp 7: Hypothesis Testing
11/10-11/14	11/11 11/13	Chapter 8: Linear Regression
11/17-11/21	11/18 11/20	Finish Chapter 8 Exam Review: Thursday
11/24-11/28	11/24	Final Exam Tuesday: Chps 5-8; No Class Thursday - Thanksgiving
12/01-12/05	12/02 12/04	Project Oral Presentations last week of class

*Please note that the schedule is tentative and may be adjusted at any time.

Stat 310 Project

Please choose one of the following options for your class project.

Option 1

1. Analyze a dataset using appropriate statistical methods (e.g. t-tests, ANOVA, regression analysis). You can use those discussed in class or more advanced methodology as deemed necessary.
2. Write a report of your work. This should include an introduction, data description, objective of analysis, methods used and why, assumptions, results, and conclusions.
3. Give an oral presentation in class. Your presentation should include a description of the data and objective of the analysis, methods used and why, results of analysis, and conclusions. Graphs are particularly helpful if applicable.

Option 2

1. Choose a published article from a scientific journal of interest (what you can understand).
2. Write a thorough summary review and critique of the article. This should include an abstract, introduction (purpose of the study), study design, statistical methodology used, results, conclusions, and implications in your own words.
3. Give an oral presentation covering the topics in (2). You should also discuss your views on the statistical methodology. Scan graphs for presentation.

Notes and Grading:

1. You must work in teams of at least 4.
2. You may use a dataset from ongoing work in other classes/labs. However, new work/results must be added.
3. Feel free to use any statistical software you like.
4. You will be graded on (see project grading rubric):
    a. Effort and whether or not the appropriate methodology is used
    b. Presentation
    c. Written Report
5. I expect everyone to be present on both presentation days.
6. Most importantly, have fun with this. I want us all to learn from one another and see various applications of statistics.

Project Grading Ruberic
Davies – Stat 310

Paper

CRITERIUM	**POINTS EARNED / TOTAL POINTS**
length (~1500 words)	/ 6
At least 3 references	/ 2.5
At least 2 types of sources (ie. book, journal)	/ 1.5
organization (intro, body, conclusion)	/ 10
readability (flow, use of language)	/ 10
facts backed up (use references)	/ 10
Statistics content	/ 10
TOTAL	/ 50 = %

Oral Presentation

CRITERIUM	**POINTS EARNED / TOTAL POINTS**
organization (intro, body, conclusion)	/ 10
Presentation of Statistics content	/ 10
Clarity	/10
Slides (readability, layout, no obscure graphics, large data sets or tables)	/10
Number of Slides (~10)	/10
TOTAL	/ 50 = %